



INDIAN OCEAN
COMMISSION



National Circular Economy Framework & Guide for Entrepreneurs for Comoros

Country report

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Introduction

Circular Economy (CE) has experienced a worldwide take-off due to a growing concern about resource extraction rates and the pollution resulting from production processes within the framework of the linear economic model.

CE is “an industrial system that is restorative or regenerative by intention and design” (EMF 2013). It goes beyond recycling and waste reduction, aiming to value waste and keep materials in circulation as long as possible. It is about extracting higher value from fewer resources by increasing productivity and efficiency. It fosters moving from ownership to access to products, creating a sharing mindset allowing to reduce consumption through increased efficiency of asset use. For island states, CE is highly relevant due to their vulnerability to climate change and pollution but also due to the reliance of countries on imports for most consumer goods. The Indian Ocean Commission has therefore secured funding from the World Bank to support the SWIOFish regional project and increase efforts to set up a circular economic model for the supply and production chain to reduce downstream marine pollution. The CE Project’s aim for each AIODIS country is to foster a circular economy and protect the environment and natural assets while aiming at economic growth.

The present report’s objective is to showcase a national policy framework and guidelines for entrepreneurs. Thanks to collaboration with local experts and government officials, local agencies and international foundations, an understanding of the current situation has been attained in the review report. Possible approaches and actions have now been identified to move forward. These actions are gathered within the present document. Thanks to policy adaptations and various initiatives made throughout the past decade, Comoros have already laid down the the required bases to move on towards a CE. Involvement from the private sector, civil society and Non-Governmental Organisations (NGOs) has equally increased the understanding of the CE concept; cornerstones have been laid amidst society.

The document is divided into two parts. First, it presents a policy framework aiming to foster CE and suggests legislative implementations for Comoros. To facilitate the connection between authorities and policies and the private sector, it is important to guarantee a common understanding and an agreement on how to proceed, with the goal of a circular economy in mind. The second part of this document then presents CE guidelines for entrepreneurs. Implementing a CE goes beyond recycling and waste reduction. It aims to value waste and keep materials in circulation as long as possible. It encourages extracting higher value from fewer resources by increasing productivity and efficiency. Therefore, to move towards a circular economy it is crucial to involve local businesses and the private sector in order to facilitate collaboration, implementing respective practices along the path within production, distribution and treatment facilities. The guidelines for entrepreneurs are linked to the policy framework and legislative suggestions made during the first phase. Explanations on how to set up a business in Comoros with a circularity target, as well as the transition toward more sustainable business practices for established companies will be included and offer step-by-step advice along the way. This will allow to consider better the various informal sectors and to better involve the authorities and businesses in the common pursuit towards a circular economy.

1. Policy framework

The framework lays out possible ways forward to reach a CE based on the particularities of Comoros and updates from the local expert party to this work. Acting upon present conditions, legislation will be adopted to develop a circular economy while aiming further to identify additional opportunities to expand the economy and on the whole improved materials' efficiency.

1.1 Establish regulations for the country's Circular Economy

National Policy goal: The government needs to adopt a statement committing to a circular economy and fill the legal gaps. A certain number of legal texts exist in the country but they are not harmonised to address CE, comprehensively (see Annex 1).

Rationale: To date, there is no specific CE legislation in Comoros. At present, there are only two pieces of law that are directly relevant to waste management and indirectly to CE: they are the framework law on environment and the law banning the use of plastics.

Comoros have neither a policy nor a specific strategy towards CE. This falls within the remit of the National Waste Management Agency (ANGD), incepted in 2020. The policies and sectorial strategies presently available only mention elements which could support efforts towards the CE sector. There is no real regulation across a sector still at an embryonic stage.

The interaction between the industry and the authorities, for a common action towards a CE, is very limited. This was exemplified by COMCO, a Coca-Cola franchised company located in Anjouan. After having taken the risk of losing its licence in 2010, it has been compelled to reexamine its environmental practices. For the authorities, reduction of waste and the reintroduction of glass bottles to replace plastic ones became a point of focalisation.

The government has publicised its objective in terms of circular economy through encouragement to private players and NGOs such as the Bandabisty association. The government has provided this charity with a plot of land for its waste upgrading activities. The Comorian government collaborates directly with the associations, supporting their initiatives (equally the case for 2Mains association) but gives no clear indication on its follow-up intention.

In Comoros, the polluter-pay principle (PPP) is not mentioned in the integrated waste management's defining project but it is applied at the Itsoundzou landfill site. There is no document as yet defining a waste management policy or national strategy. There is nevertheless a control and monitoring by ANGD and the waste management activities environmental directorate.

Despite the absence of a written acknowledgement of the PPP, the consumer, industry and the public sector are all responsible, through the Exo Tax, of the financial burden going along the cost of pollution. Comoros have enacted producer's extended responsibility (PER) across the whole supply chain to prevent extended pollution and reduce the PPP's impact, as was the case with Coca-Cola. Though existing, PPP and PER are not developed enough to provide a real base to CE and reduce the various forms of pollution, specially marine pollution. Another exemple is their absence from the legislation on waste management.

Specific Actions Required: To reach the above objectives, it is suggested that the country adopts a declaration or a framework legislation favouring players' integration and harmonising actions towards a CE. The commitment towards the CE could be embedded into the country's existing blue economy's strategic policies.

It is also suggested to adopt specific legislations, now not enacted, to favour the CE. These legislations include texts on recycling and a law on the PPP and PER, as well as one for a sustainable waste management in a CE and another one to curb squandering, making producers accountable and forcing them to collaborate with one another. Pieces of law to encourage conservation and repairing skills (auto mechanics, shoe repair, electronics, household appliances, furniture coating, junk shops, etc.) are welcome. As well as texts encouraging innovative entrepreneurship, favouring waste upgrading, notably production of compost and biological manure, based on foundation 4 (agriculture) of the Plan Comores Émergent. Texts to combat illegal waste dumping, texts compelling manufacturing industries to reutilise materials in the food and cosmetics sectors, as well as in printing, are considered useful.

1.2 Train through awareness and education campaigns

Mobilise players for CE: To achieve a CE in Comoros, it is essential to expand the knowledge about it at all levels, specially in the key sectors of the blue economy. The CE concept is still new at national level. The population and government departments are aware of the positive impacts the CE can afford the country, in terms of job creation and economic growth. However developing the sector raises difficulties for financial and technical issues.

Rationale: There are efforts from the government, civil society and private businesses to raise awareness among the population but they are limited in scope. Since 2019, a eco-circular national forum on the blue economy is organised each year by the Young Entrepreneurs Network, via the National Platform and the National Blue Economy Committee (www.facebook.com/ecocomores/), in view of promoting the concept and sensitising enterprises, associations and cooperatives (agriculture and fisheries) to the circular economy and its relevance in their business plans and project documents.

Required Specific Actions: To reach the above objective, here are a few examples of required specific actions:

- Proceed with the existing awareness raising campaigns, involving therein society at large;
- Uphold initiatives introduced by organisations and institutions committed to the promotion of a circular economy (see annex 2);
- Consolidate the collaboration between business and authorities;
- Intensify and broaden the school campaigns to sensitise youngsters (initiative already launched by Association 2Mains with schools, early in 2020, on protecting the environment and promoting CE, alongside waste source separation);
- Increase the interaction with businesses to showcase circular economy models and highlight for them these models' necessity.

It is thus recommended to support existing initiatives and replicate them and other existing educational activities, at the level of government, businesses and population. In Comoros, awareness raising campaigns about the environment's sustainable protection have always existed, as well as actions towards a CE but it's only recently that the term circular economy gained mileage. The CE's promotion is carried out under various forms: training (university talks), events (public forums), coaching (by experts) or eventually through counseling (from the government in favour of stakeholders, notably businesses). The campaigns can be seen in various sectors : tourism (with the promotion of clean beaches and towns), agriculture (inputs manufacture for animal feed) and services (training, advice, events organisation) (see Annex 2)

1.3 Improve material stock management

1.3.1 Collection and sorting system

Waste value optimisation: To improve existing waste management's processes, it is recommended to optimise present collection and sorting systems. This is also acknowledged in the report on marine plastics in the framework of the AIODIS project. Though the waste is collected, this collection is not carried out in a uniform way across the country. The waste sorting procedures are not proven and do not allow an effective waste-to-value recovery.

Rationale: Waste collection is carried out some four times a week (in a town like Moroni) by using containers, door-to-door collection but mainly from the curbside, on the ground or in a trash bin. Waste flows are not sorted in different types of materials such as metals, electronic components, paper and cardboard, organic waste, plastics, glass or even hazardous waste. The responsibility for collection and transportation of waste is the municipality's through private operators.

Some businesses equally carry out waste sorting. They are, for instance, mineral water bottlers such as Salsabil and Huriya. These companies produce considerable amounts of plastic waste. Further to an agreement with the sorting facility (2Mains / Environment's General Directorate), Salsabi sorts out at the source and sends its refuse for shredding to the sorting facility. Unfortunately, it produces without selling as there are no potential buyers as yet for the facility's products.

Specific Actions Required: Further to the above, it is thus useful to increase the number of collection points, to introduce and improve sorting procedures and to transform the existing site for sorting and waste-to-value recovery into a more sustainable facility, averting landfill disposal. Considering Comoros mountainous landscape, whichever site hosting a landfill may send waste into the sea upon a natural disaster (cyclone). None among the chosen sites has the capacity to centralise all the waste of the island. In Anjouan, the Didrihari site could barely handle the waste from Mutsamudu bay.

Efforts to set-up other waste sorting and waste-to-value recovery sub-units on the other islands could be a good start. It requires encouraging intercommunality. Another important step in this process consists in supporting existing business engaged in waste collection and sorting, replicating them at national level. A freshly created company, not fully operational, is in place, ready to benefit from governmental support (see Annex 3)

1.3.2 Waste treatment facility

Improve the efficiency of waste treatment facilities: tackling the processes applied in the waste treatment facilities represents a key step towards circularity. To that end, the country must upgrade its present facilities' efficiency and introduce more sustainable solutions such as landfills with gas congestion, incineration with energy recovery, waste sorting and cleaning plants, recycling stations. Most of the present installations do not allow waste-to-value recovery and do not achieve their objectives in terms of waste reduction.

Nevertheless an informal partnership in Anjouan (Project Executors) specialised itself in the installation of biodigestors to provide cooking gas and electricity. Projects involving the three islands have already been implemented. Its activities revolve around sustainable agriculture, livestock and chicken farming as well as fisheries. The partners are solicited for lectures at Comoros University and also promote activities related to circular economy. They also achieve projects for their customers in the various sectors mentioned above. The partnership's objective is to contribute to food security (availability of financially affordable foodstuffs for all social categories) and nutrition (availability of a balanced nutrition, biological and preventing non communicable diseases such as diabetes and hypertension).

Rationale: The government has engaged discussions to improve the present landfills. Plans to revamp waste management's structures are presently being designed, with a focal point on medical and recyclable waste, notably plastics. At present, the authorities assess the possibilities of opening landfills equipped for anaerobic digestion or even recycling plants with waste-to-value recovery, over and above the Waste Sorting and Value-Adding existing practices. Efforts to implement waste sorting began with an awareness raising campaign in early 2021. Besides, increasing the collection of waste and reducing uncontrolled waste disposal by 80% towards the end of 2021 are the targets of the Waste Management National Agency's general directorate, further to the recent purchase of three trucks, thanks to an Italian assistance to waste collection in Moroni.

Specific Actions Required: To achieve circularity, the existing solutions include the implementation of a high yield recycling plant and support to existing businesses which treat waste with circular motivations. At present, there is only one known formal company which delivers waste value-adding activities (see Annex 3)

1.3.3 Dumping and littering

Reducing pollution through a better waste management: For the country's blue and circular economies, the reduction of waste and related pollution is primordial at all levels and, notably, in the ocean. The level of industrial pollution is low at present but litter's accumulation is significant, coming from trash disposal in the towns and on the beaches. The more so, initial efforts are being defined to reduce and eventually avoid plastic waste in the sea.

Rationale: There aren't yet any declared anti-uncontrolled landfill and anti-refuse policies. The legislations and corresponding fines have been adopted but are not always enforced, lacking follow-up.

Specific actions required: It thus becomes obvious that the country will need to focus on upgrading its industrial waste surveillance and ensure fines are applied, working towards an understanding of materials' use in sectors such as tourism, fisheries or agriculture.

For Comoros the solution lies in supporting existing industrial waste surveillance programs and a subsequent sanction system. Further on, an improved cooperation between the respective regional and national players is recommended, to optimise collaboration and coordination in waste management. Removing legal barriers and encouraging businesses to develop sustainable practices are also recommended.

1.4 Restore and better manage the use of natural flows

Management of natural resources: To achieve sustainable use of natural resources within a CE, Comoros needs to further develop and support existing initiatives. These aim at regenerating natural flows, especially in the blue economy sectors such as fisheries, tourism or agriculture. Comoros has put in place various strategies related to biodiversity and the blue economy aimed at increasing environmental protection of marine and coastal ecosystems.

Rationale: There is a limited number of research centres entrusted with responsibilities towards the monitoring of natural resources such as fish stocks, forest abundance, wildlife preservation and water pollution. As a follow-up on existing monitoring efforts of natural resources, there are limited - but nevertheless existing - surveillance efforts from the National Fisheries Control and Surveillance Centre.

Specific actions required: Available solutions include increasing protection of EEZ through MPAs, reinforced monitoring of existing MPAs and areas-based management as well as increasing restoration activities. The continuation of efforts towards a Blue Economy and the support to initiatives in this domain are also part of the solution in Comoros.

As part of their conservation strategy, Comoros have implemented a strategy fostering the creation of a network of protected areas. Six priority zones of sustainable development are identified for the creation of protected areas. They are the Karthala Zone, the Coelacanth's Zone, the Mount Ntringui Zone, the Bimbini Zone, the Mohéli Park's Zone and the Mlédjélé Zone.

As regards the EEZ, there is a law (Loi n°82-005) defining the delimitation of maritime zones in the Islamic Federal Republic of the Comoros.

A key step for Comoros could be to improve existing monitoring practices and capabilities. Building better knowledge on the use of natural resources will provide evidence for future decision-making concerning resource extraction and oil drilling. To address regeneration of natural flows, a parallel step is to support and upscale existing activities such as mangrove restoration, locally managed marine areas and MPAs..

1.5 Incentivise businesses

Putting businesses at the centre of the CE: Increasing the involvement of businesses and entrepreneurs is a stepping stone towards achieving circular and blue economy activities. Businesses and entrepreneurs who are already involved in activities related to the CE are not properly supported. The present government's priority - waste management primarily in the capital (Moroni) - should be extended to the whole island and, if it turns out to be a success, to the other islands. Meanwhile the municipalities, associations and NGOs as well as some private players work each on their own, most of them to develop an unexploited sector. Some of them joined hands, like the intercommunality between Domoni and Bambao on Anjouan, certain associations being encouraged by the government as is the case for Bandabisti on Grande Comore and 2Mains.

Rationale: The public sector is barely aware of the private sector's initiatives and efforts towards a circular economy and doesn't pay attention to circular business practices. The government has encouraged objectives linked to the green and circular economies in businesses it advised with regard to them. An example of that is Salsabil which, after being advised by the Environment Directorate and 2Mains association, has now accepted to send plastic waste for recycling to the sorting facility. The service is now free of charge but the enterprise has agreed to allocate financial resources to its sustainable refuse management if a solution were to be proposed.

In the absence of a government's control over business practices and understanding of circular efforts, companies do not cluster - according to equipment, use of materials and production practices - to institute a closed loop system or an industrial partnership.

Specific Actions Required: So as to promote the adoption of an ecological enterprise or the transition thereto, the government must provide a structural and financial support to businesses, notably through the following measures

- Set up a circular economy office within one or several of the government departments
- Create company groupings according to business activity, material use, equipment requirements and proximity to improve material use and infrastructural efficiency while reducing supply chain and waste treatment costs by sharing them among a group of firms
- Engage into a dialogue with industry to produce waste product valorisation
- Introduce tax relief schemes such as 3-5 years starting period completely tax-free or reduced
- Reduce the rate of Value Added Tax on repair and refurbish activities to encourage reuse.

- Embed into national policy the obligation to consider the Circular Economy concept and the 3R principle – Reduce, Recycle, Reutilise – for every entrepreneur, agricultural or fishing cooperatives, before the design of the business plan and project document, so as to promote investment in ecoresponsible machinery or products.

In Comoros, existing facilities such as government advice to businesses must be better promoted with enterprises so as to favour the efforts towards a circular economy.

2. Guide for entrepreneurs

To implement a circular economy model in businesses and between sectors, thanks to synergies, the public and private sectors' efforts are required to create the adequate environment. As the private sector players are capable of deciding and acting rapidly, private enterprise can be a local circular economy's powering engine. The enterprises are at present in a position from which they can lead change. By taking the lead and adopting the idea of transitioning towards circular economy practices, they can as well influence government's decisions in that field.

So as to engage businesses in accepting the efforts to reach a circular economy, it is necessary to provide them with guidelines on the way to set up a circular production cycle and transition thereto. Thanks to consultation with local experts and government representatives, this document brings out the existing good practices as well as the opportunities for a circular economy. Achievable solutions and stakeholders liable to involve themselves in the process have been identified. Guidelines are proposed to kickstart a discussion between sectors to provoke synergies and disrupt the linear economic model. The identification and highlight of possible collaborations between enterprises and step by step guidelines for sustainability seeking businesses are starting points towards the final objective: protecting marine resources and reducing oceanic pollution.

The guidelines can help young companies as much as existing companies to establish entrepreneurial models which allow a more effective resource management while progressively removing waste creation, thus tackling maritime pollution at its source. The guidelines offer to future entrepreneurs administrative advice to create their enterprise and identify the main implementation modalities of a circular economy. For existing enterprises, the guidelines include step by step advice on the way to transition towards a sustainable production as well processes for systems associated to a circular economy. Upon concluding, the guidelines come with in-depth solutions present opportunities that business can pick-up and implement, in line with their ongoing quest for sustainable processes. Based on this document's content, companies will be in a position to progress in a way relevant to a better resource management, reduction of waste production and decrease of maritime pollution.

2.1 Creating a new CE business

2.1.1 Establish the mission, vision and objectives of the company

The company's mission must embody its essence and *raison d'être*. The vision comes as the way the company is envisioned in the mid-long term. Objectives of the company derive from the founders' goals (personal and professional motivations) and should allow to tackle environmental and social challenges and to satisfy customers' needs.

For a CE business, these three elements should refer to one of the CE principles: (1) preserve and enhance natural capital by controlling finite stocks and balancing renewable resource flows; (2)

optimise resource yields by circulating products, components, and materials at the highest utility at all times in both technical and biological cycles and (3) foster system effectiveness by revealing and designing out negative externalities.

In Comoros, tourism, fisheries, agriculture, breeding and manufacturing have been identified as key sectors. They offer impactful and far-reaching opportunities to reduce maritime and terrestrial pollution while introducing circularity in Comoros.

2.1.2 Identify key stakeholders and customer segments

This step involves identifying and prioritising those stakeholders that will play a significant role in achieving the objectives of the project. Stakeholders include the team (co-founders and employees), partners, beneficiaries (those who benefit from the value the project generates) and customers. The latter are at the core of the business model as they buy the services or products. The project's main impact in society has to be intrinsically linked to the local community and cover a local demand which needs to be met. Another task is to develop a sound understanding of the potential customer base (customer identification and profiling) and the existing market around it (market assessment).

To promote a CE in Comoros, it is essential at this stage to include stakeholders like the government, civil society organisations promoting CE, institutions like the Ellen MacArthur Foundation. To identify key stakeholders, entrepreneurs should target main suppliers, intermediaries, processing associates as well as customers and public partners. In the above identified sectors of fishery, agriculture and manufacturing, some key stakeholders are essential (Please refer to Annex 4).

In the fishing sector, concerned institutions haven't taken as yet direct circular economy initiatives. However, the fishing, breeding and agriculture sectors represent Foundation 4 in the Plan Comores Emergent, for food security. Clustered, these three sectors can collaborate towards an efficient circular economy, supporting the country's sustainable development.

Waste from the agricultural sector can serve as livestock feed and, mixed with cow dung, in the preparation of compost. Fish waste can be turned into flour, serving in the fabrication of livestock feed (experience carried out by the Société de pêche des Comores). Farmyard animals' droppings can be used in the production of biogas in the same way as cow dung (experience carried by some private individuals in Comoros).

As regards the breeding sector and the byproducts of livestock slaughter, only blood from the animals stomach and intestine is discarded; the rest is consumable by humans whereas the skin serves in the fabrication of musical instruments.

In addition to the above, the tourism and handicraft sectors lay together foundation 1 of Plan Comores Emergent (National framework plan). Comoros thus foresee, in one of its PCE flagship projects for tourism: seaside tourism, eco and agro-tourism, solidarity tourism... etc. In this way, at least three dimensions that go together in a circular way in these sectors are clustered, with respect to the environmental, economic and sociocultural dimensions.

2.1.3 Develop the value proposition

CE businesses create environmental value by tackling circularity and environmental challenges (which are key drivers for their existence) through their business solutions and operations. They create social value by empowering their stakeholders (including employees, suppliers, communities and future generations) and meeting the needs of their customers.

To achieve this, it is suggested to create strong across the board collaboration and involve customers and stakeholders in the process of designing and delivering the value proposition (through co-creation).

In Comoros, the issues of marine pollution, excess waste generation, failing waste responsibility, extensive resource extraction and failing responsibility towards waste represent key challenges which will constitute a good value proposal

2.1.4 Identify the modalities of implementation

2.1.4.1 Key activities and resources

Key activities outline what needs to be done in order to define and offer a value proposition to a specific customer segment. They include problem-solving (such as consulting or counselling), production (manufacturing, etc), platform/network/sale and supply chain management.

Activities within CE businesses should include those proposed in the different business models (in section 4 of these guidelines).

Key resources represent all the elements and aspects that are essential to the proper business operations. They include human resources, physical assets, intellectual, financial and natural resources. For the latter, a special focus should be placed on the use of recycled materials, sustainable or renewable resources as input materials.

Entrepreneurs also need to consider upcoming legislative changes in Comoros such as the laws on the PER and PPP. At this stage it can also be helpful to find out possible government support such as tax rebates, investment subsidies and sectorial specific funds.

2.1.4.2 Customer relationships and channels

Different types of relationships can be established with customers, such as personal assistance, self-service, automatic service, community or co-creation.

In order to correctly establish the different types of customer relationships, it can be useful to establish a customer journey map of the customer group in question. A customer journey map is an oriented graphic that describes the journey of a user by representing the different touch points that characterise his/her interaction with the service or product.

It is also necessary to distinguish between the way (channels) of attracting the customer's attention and the way of establishing and maintaining a close relationship with the customer. Channels include all means of communication and distribution to reach customers and deliver a value proposition.

For EC companies in Comoros, it is possible to explore existing initiatives for sharing economies, replicating take-back options for customers to return products and helping materials to stay with the company, while exploiting options to continue interacting with customers as already practiced with the Coca-Cola company in Anjouan. A new UNDP project in Comoros also aims to create a plastic bottle take-back centre. (See Annex 3)

2.1.4.3 Cost structure

It is important to carefully classify costs (fixed and variable) so that the business can analyse and improve its performance.

Within a CE, it is useful to explore potential costs linked to niche CE areas and identify cost savings arising from CE practices such as equipment sharing, recycled material purchases or supply and transport costs from abroad.

2.1.4.4 Revenue streams

The business must have an accurate idea of the importance of each revenue stream and which one best matches a particular customer segment and channel. Streams might include asset sale, usage fees, subscription fees, licensing etc.

2.1.5 Test the product or service

Before fully implementing the modalities above, the entrepreneur needs to test key variables:

Problems and needs identified should be tested by talking to experts in the field or by interviewing key stakeholders.

Participation of key stakeholders should be verified through various types of consultations and meetings on the business objectives where multiple stakeholders can provide a good measure of their willingness to engage.

Customer segments should be validated through focus groups, interviews, debate or conversations to check their needs, aspirations, gains and pains, etc. Focus groups, interviews, debates, and conversations could be used including on social media.

Value proposition needs to be tested by building a prototype at small-scale or semi functional versions of the services/products. Here, participants' reaction to the test might include satisfaction level, feedback, and curiosity/ demand for more.

Once hypotheses on the different variables have been tested and validated, the service/product has to be scaled up from prototype to the optimal market size where viability is attained.

To test the circular product or service, the company can mobilise existing platforms for entrepreneurs and green products, such as the Bureau du Réseau des Jeunes Entrepreneurs-Plateforme Nationale (located at the Maison de l'Emploi, Moroni, Grande Comore) (see Annex 4).

2.1.6 Mobilise tools for implementation

When the business model is validated, implementation of the modalities presented above can be facilitated by various tools. First is establishing a financial plan with income statements, balance sheets and cashflow projections, and a funding plan identifying traditional investors and banks as well as other funding mechanisms such as crowdfunding, financial cooperatives, microcredit, ethical banks. Second is having a legal management plan to choose the best-fitting legal form according to the needs and business model. Third is setting a roadmap to foresee the progress of the business from year 0 to the medium and long-term. Fourth is to have an operation and management plan which dictates how operations are performed and managed by staff and by assigning roles and responsibilities and setting a schedule. Tools used need to be adapted according to the CE business model adopted.

However, these appropriate tools are still at the design stage. Entrepreneurs could in the near future refer to existing governmental services such as the National Waste Management Agency, the Directorate of Environment and its annexes on the islands, the Commissariat Général au Plan (which is going to support a biodigester project) and the Regional Commissioners as soon as these tools are available (see Annex 4 for more details).

2.1.7 Measure impacts and improve

Effectively measuring environmental and social impacts is essential to CE businesses. In addition to measuring how the business is doing regarding the achievement of objectives and mission, environmental indicators are needed to assess environmental performance. Environmental indicators such as water consumption, material use, waste generated per service or product, or other CE related indicators are suggested to be used in order to assess current performances. Constantly improving the business is key to achieve the circular economic objectives as it is a process that requires ongoing efforts to improve efficiency. Common areas of improvement include levels of participation of stakeholders, communication and marketing to incentivize customers, improve environmental performance, ensure green procurement and increase environmental awareness amongst the public.

2.2 Transitioning to a CE business

2.2.1 Map your impact and set priorities

Learn how to bring together an internal “sustainability team” to set objectives, define targets, review your environmental impact and decide on priorities. In this process, you need to evaluate impacts regarding natural flow use and material stock management. In Comoros, the main environmental impacts of the economic sectors are marine pollution, waste generation and loss of biodiversity.

2.2.2 Choose indicators and understand data needs

The next step will consist in identifying indicators that are important for your business and learn about which data should be collected to help drive continuous improvement. To assess the circularity of your business, you can use CE related indicators such as: use of renewable energy; greenhouse gas intensity; energy intensity, intensity of your residuals; releases into the air and water.

2.2.3 Measure inputs used in production

Identify how materials and components used into your production processes influence environmental performance. Businesses can also measure CE related performance including: material consumption, resource extraction, renewable energy consumption, waste generation, import of inputs, non-renewable materials, restricted substances, recycled or reused materials. Businesses can check the availability of recyclable materials and monitor availability of waste materials/recycled materials as inputs into production process.

2.2.4 Assess the operations of your facility

It is essential to consider the impact and effectiveness of operations in the facility. Residual waste generation and excess material that can be phased out and managed more efficiently going forward (e.g. water consumption, energy intensity, greenhouse gas generation, emissions to air and water, waste generated). Efforts to improve production and material use efficiency toward circularity while reducing waste creation must be ongoing.

2.2.5 Evaluate your products

Identify factors such as energy consumption in use, recyclability and use of hazardous substances that help determine how sustainable your end product is. Businesses can use CE related indicators such as: recycled/reused content of your products, recyclability of your products, renewable materials used

in your products, non-renewable materials used in your products, restricted substances contained in your products, energy consumption in using your products, greenhouse gas emissions from the use of your products. You can also evaluate the possible incentives to recycle and engage customers to return products and possibly keep materials in cycle.

2.2.6 Understand your results

Learn to read and interpret your indicators and understand trends in your performance. Businesses can focus on CE related indicators that align with business models suggested.

Entrepreneurs and companies can refer to existing government services and companies that can provide assistance in this process, such as the Environment Directorate and the company «Comores multie-co-service-SARL», specialised in waste recovery in Moheli.

2.2.7 Take action to improve your performance

Choose opportunities to improve your performance and create action plans to implement them. CE businesses should focus on CE related indicators that align with business models suggested, and stay up to date with new arising sustainable opportunities and drive ongoing progress by pinpointing areas of improvement or non-circular practices.

2.3 Circular Business models for entrepreneurs

2.3.1 Circular design

This CE model relies on the following elements:

- **Circular product design:** use recyclable materials for goods and packaging that allow for a circular system and local supplies at a maximum
- **Product/service design and provision:** access over ownership and product service systems
- Local supplies and local demand for service/good
- **Economy of functionality** (rent resources rather than buy and own them).

There is only one formal enterprise that operates on a fully circular design (see Annex 5).

2.3.2 Optimal material and resource use

To adopt this model, the following activities can be undertaken:

- **Understand the value** of waste materials and engage in opportunities from materials
- **Buy recycled materials** and reduce input material costs
- **Target recyclable and sustainable materials** and pioneer in industrial waste valorisation
- **Introduce Industrial symbiosis;** internalise a maximum of production steps within the company on the same site to reduce transport costs. This also helps with waste creation as all accrues on the same site, making recycling or reusing easier since larger amounts hold more potential
- **Redefine retail;** skip retailers by directly interacting with consumers. Simplifies recycling practices, understanding of consumer behaviour and increases revenue

- **Inspect daily practices** to identify non-sustainable production practices such as use of single use plastics, equipment and garment
- **Adopt a closed-loop process**; use residual outputs and by-products as input for other production processes
- **Set up internal target rates** to increase recycling rates and encourage sorting to improve employee understanding of a circular economy and its benefits

In Comoros, a system for recycling machine parts for resale is already implemented. Electronic repair shops keep wrecked machines to be able to reuse the materials that are left in good condition.

However, Comoros do not really recycle materials, although some individuals export them, including batteries for recycling. This is linked to the fact that Comoros does not yet have an electronic manufacturing industry.

2.3.3 Value recovery

This CE model is grounded on the following elements:

- **Reuse and recycle:** Introduce ways to keep waste materials within the company and the production cycle; Increase material use efficiency
- **Repair and recondition:** produce goods and services to last (quality over quantity) and provide service to repair and refurbish products and services
- **Remanufacture** products that did not meet standards and were considered waste
- **Sensitize consumers:** inform them of recycling and repair opportunities to incentivize closed-loop material use while explaining competitive advantage of your service/product compared to non-circular business models.

There are very few companies that maximise the utility and value of some of their materials in their production cycle and achieve greater efficiency in the production process, thereby minimising waste generation (See Annex 5).

2.3.4 Collaborative economy

To adopt this model, the following activities can be undertaken:

- **Group businesses** that use similar materials to share transport supply costs and open channels to trade materials between firms
- **Foster cooperation:** exchange good practices and learning experiences between companies to accelerate transition toward circularity
- **Introduce a sharing economy:** collaborate with other businesses to build expensive infrastructure or purchase equipment to improve efficiency of usage (ex; cooling units, trucks, sorting site...)

There are no existing enterprises that operate on the basis of a collaborative economy and exploit all potential by-products and collateral uses that arise during their production. Furthermore, the sharing of equipment and materials through strong industrial networking to maximise resource use is not practised in Comoros.

3. Annexes

Annex 1: Types of policies and laws towards circular economy

Stock management	<ul style="list-style-type: none"> - National awareness policy on non-compostable waste - Framework law on the environment (1994 and 1995) - including waste management measures - Plan Comores Emergent 2030 for the promotion of the circular, blue and green economy (2019)
Renewable flows' management	<ul style="list-style-type: none"> - Law n ° 82-015 relating to the activity of foreign fishing vessels in Comorian maritime zones. (1982) - National strategy and action plan for the conservation of biological diversity (2000) - Co-management policy for fisheries resources (2013)

Annex 2: Existing awareness raising initiatives and campaigns towards CE

Initiative's name	Description of activity	CE aspect addressed	Link / Contact
Bureau of the Young Entrepreneurs Network-Platform and the National Blue Economy Committee	<p>Forum that brought together green and blue employment actors for a mutual exchange and exhibition</p> <p>Forums on the blue economy and green «eco-circular» employment</p> <p>Workshops on the promotion and development of the circular economy and the blue economy adapted to the circular economy</p>	All aspects of the CE have been taken into account	vwww.facebook.com/ecocomores/
2Mains (Two hands... but also sounding like « demain », Tomorrow)	A campaign to change users' behaviour regarding waste management and to encourage them to sort at source	All aspects of the CE have been taken into account	http://www.initiativesclimat.org/Toutes-les-initiatives/Mise-en-place-d-un-systeme-de-depot-volontaire
2Mains	Awareness campaign in schools	All aspects of the CE have been taken into account	https://www.facebook.com/Association2Mains/posts/2424515004474555/

Annex 3: Examples of companies doing CE related activities in waste management

CE aspect	Company's name	Description of activity
Collection, sorting, treatment, recycling and waste-to-value recovery	Company Comores-multie-co-service-SARL	<p>the company carries out activities that go together in the EC :</p> <p>cleanliness and development of green places,</p> <p>management and waste-to-value processes</p> <p>the company intends to expand its activities in the manufacture of paper bags</p>
Collection, sorting and recycling	Sorting Centre created by UNDP-Comoros	<p>Project aiming to introduce a simple financial mechanism for the purchase of polyethylene terephthalate (PET) plastics and aluminium cans https://www.oceaninnovationchallenge.org/ocean-innovators#cbp=/ocean-innovations/establishment-pet-recovery-and-buy-back-center</p>

Annex 4: Key sectors to foster CE and related stakeholders and supporting platforms

Key sector	Identified key stakeholders	Relevance of the stakeholder	Key sector
Fisheries	Fisheries Directorate	Co-management policy. Establishment of community management measures for a permanent marine reserve area, which involve the responsibility, collaboration and participation of stakeholders (fishermen among others through associations) https://www.banquemonde.org/fr/news/feature/2016/06/14/fishing-communities-in-the-comoros-develop-fishing-management-projects?cid=EXT_WBSocialShare_EXT	Réseau des Jeunes Entrepreneurs - Comores Entreprendre https://www.facebook.com/ComoresEntreprendre/ Union des Chambres de Commerce des Comores (UCCIA, Union of Comorian Chambers of Commerce, Industry and Agriculture) https://www.facebook.com/www.uccia/
	SWIOFish-Comoros	The project supports the fisheries directorate in several areas including two important ones that can take into account the CE, namely improving the policy and regulatory framework and sustainable resource management. https://ewdata.rightsindevelopment.org/files/documents/23/WB-P132123_HKKPaBG.pdf	
	Fishermen's Association	Innovate to improve good practices; Value fish co-products (especially viscera) for human consumption Increase the conservation of fish products (through drying, smoking etc.) Obtain powdered fish co-products for the manufacture of feed for livestock consumption.	
Tourism	Tourism Directorate	Integrated project on the Valorisation and Sustainable Development of the Comorian Eco-Tourism Potential indirectly taking into account the CE aspects in a joint public-private collaboration.	
	Tourism Office	Promotion of Comorian tourism, its products, its services and brings together several stakeholders (the valorisation of waste in handicrafts contributes to the protection of the environment)	
Waste	Salsabil Company	Transfer of plastic waste to the waste sorting and recovery centre	
	Hurya Company	Transfer of plastic waste to the waste sorting and recovery centre	

Annex 5: Key examples of companies operating under CE business models

Business model	Company	Activity	Website link or Contact
Circular design	Company Comores-multi-co-service-sarl	Collection, sorting and recycling of some waste	N/A
Optimal use of materials and resources	Coca-Cola-Anjouan Company	Recycling of glass bottles for reuse	N/A

